

# On-The-Move Water Purification

## *Next Generation Hydration System (NGHS)*



Petroleum And Water Systems  
Symposium II



# Background

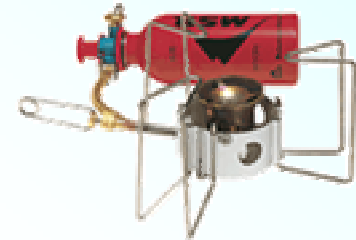
Under the brand names Mountain Safety Research (MSR), Platypus, and Therm-A-Rest we are recognized as the technical and market leader in hydration systems, hand-held water purifiers, lightweight camp stoves, cookware, sleep pads, and snowshoes.



[MSR & SweetWater Purifiers](#)



[Therm-A-Rest Sleep Pads](#)



[MSR Stoves](#)



[MSR Tents](#)



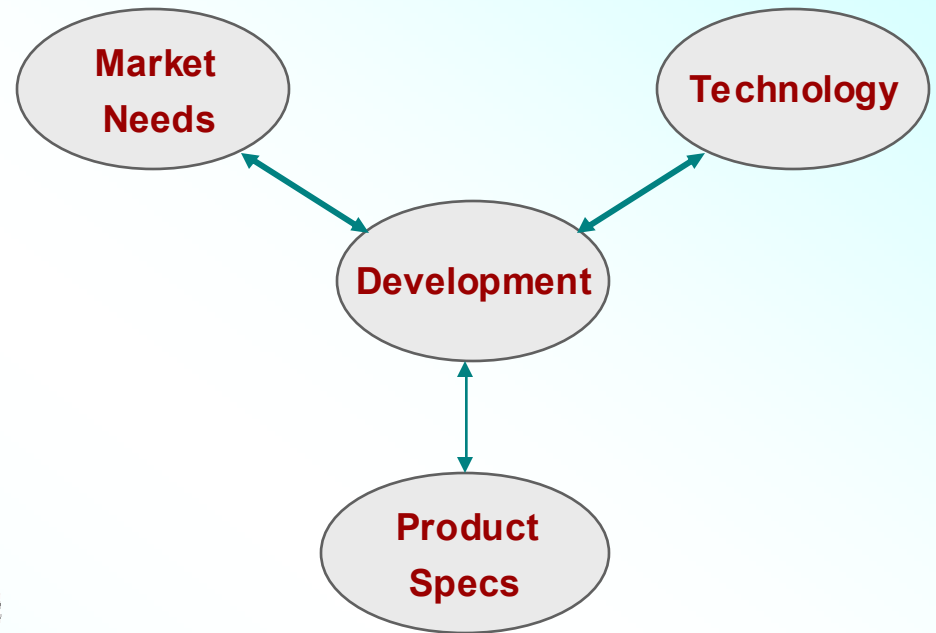
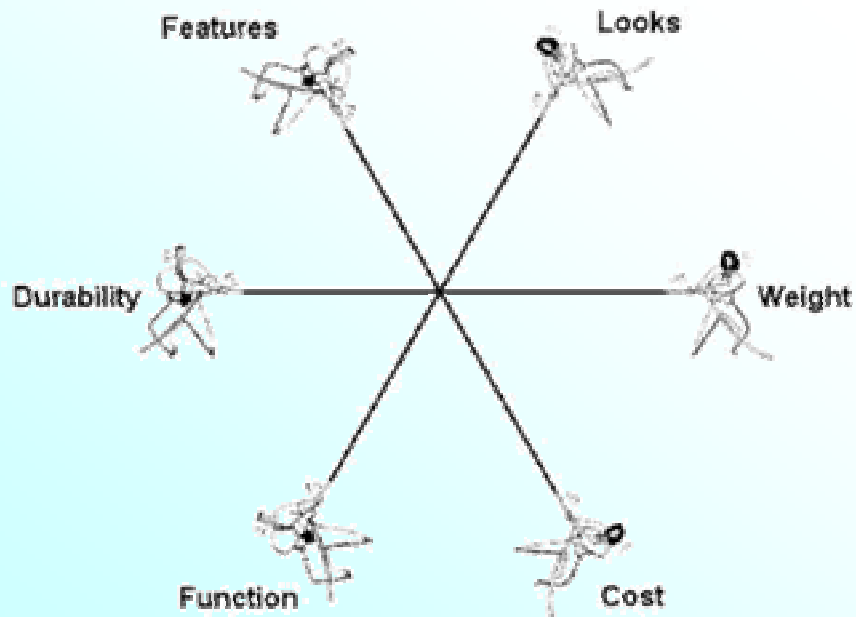
[Denali Snowshoes](#)



[Platypus Hydration Systems](#)

## *Systems integrators for individual sustainment gear*

*We specialize in meeting the warfighter's basic needs – food, water, sleep, and shelter.*



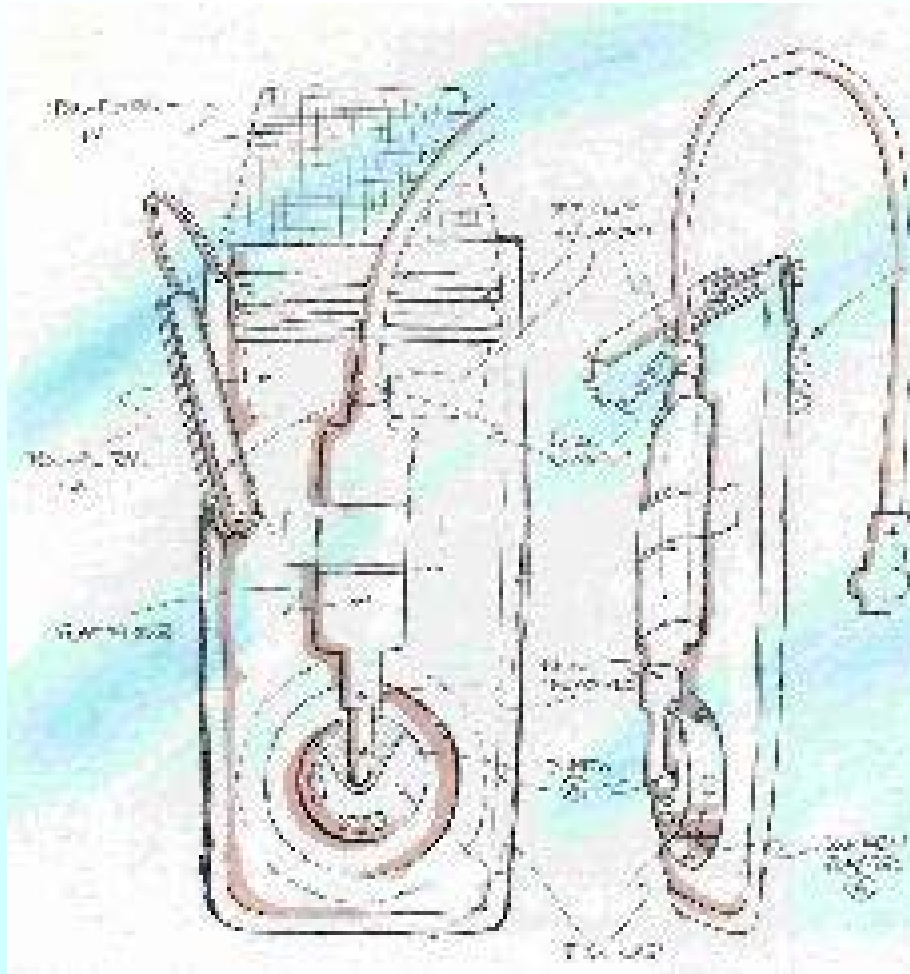
*At Cascade Designs we bridge the gap between emerging technologies and products that soldiers and backpackers can trust in the real world.*

# Needs Assessment



- *The ability to use found water is significant tactical advantage.*
- *The military's existing portable water treatment methods are ineffective.*
- *Commercial products fail to meet critical mission requirements (simplicity, durability, logistics).*

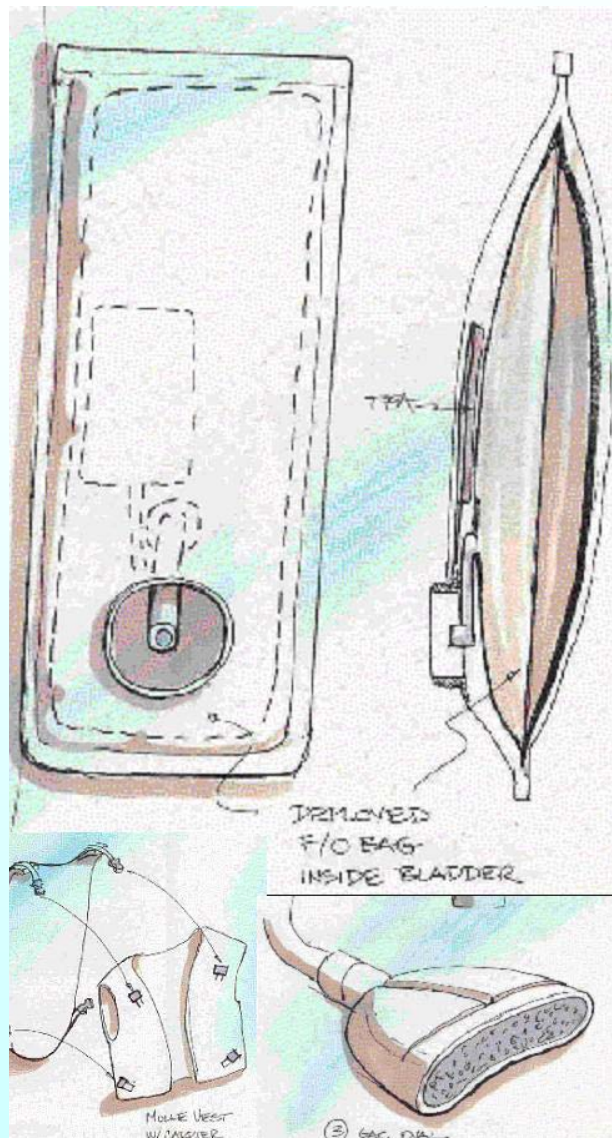




## *Mission*

Develop a modular, mission-specific, on-the-move water purification and hydration system capable of treating water sources of unknown quality.



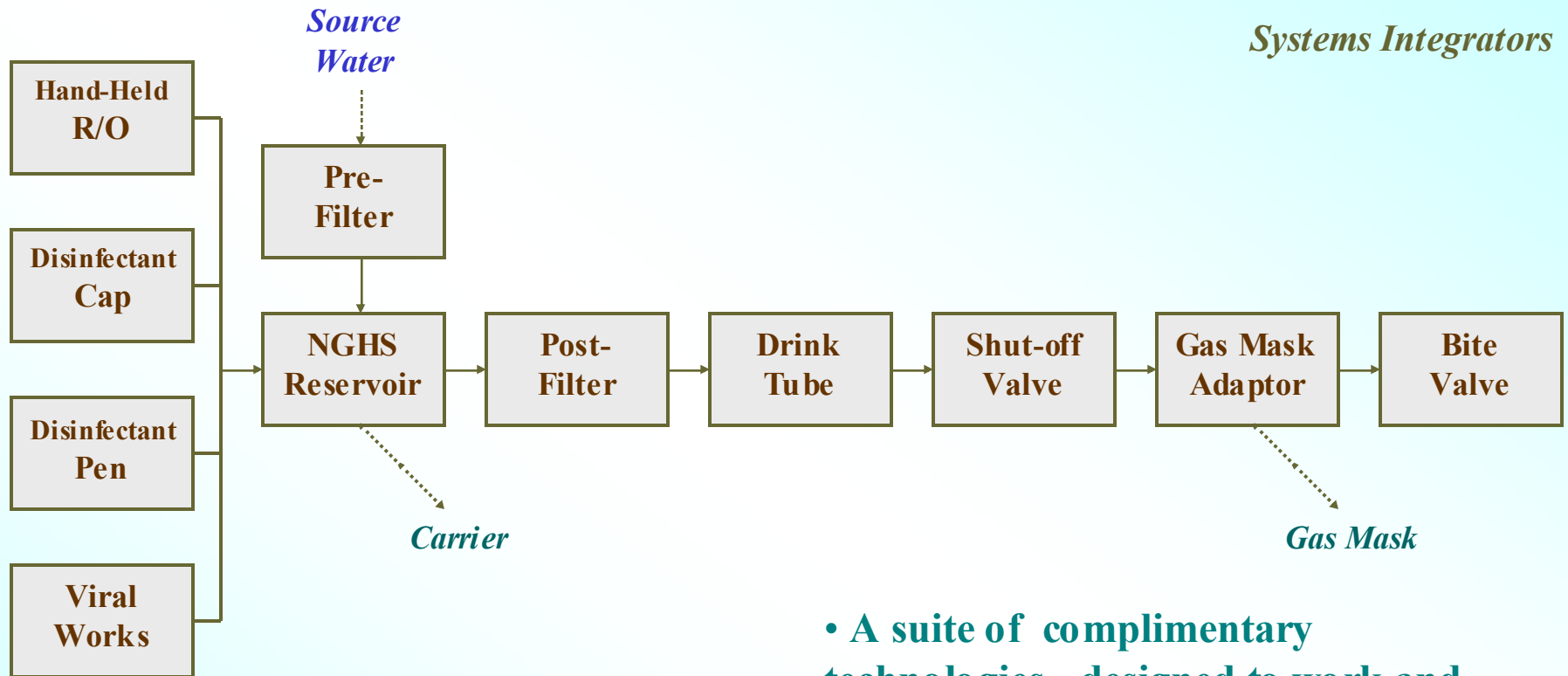


## Performance Requirements

- Capable of treating all types of water to military and EPA standards.
- Must resist biofilm growth.
- Treat 300 liters before replacement. Field maintainable.
- Desalination produces 1 liter in under 15 minutes.
- NBC & freeze/thaw resistant.

# Individual Sustainment Systems

*Systems Integrators*



- A suite of complimentary technologies - designed to work and pack away together
- Adapts easily to meet mission requirements.
- Designed to work with existing gear, and provide the platform for future innovation.

# Water Treatment Approaches

## Applied Energy

**UV  
Radiation**

**Pulsed  
Spectrum  
Light**

**Heat  
Sterilization**

**Distillation**

## Physical Separation

**Particle  
Filtration  
(Sieves)**

**Micro-  
Filtration**

**Ultra-  
Filtration  
(Membranes)**

**Adsorption**

**Forward  
Osmosis**

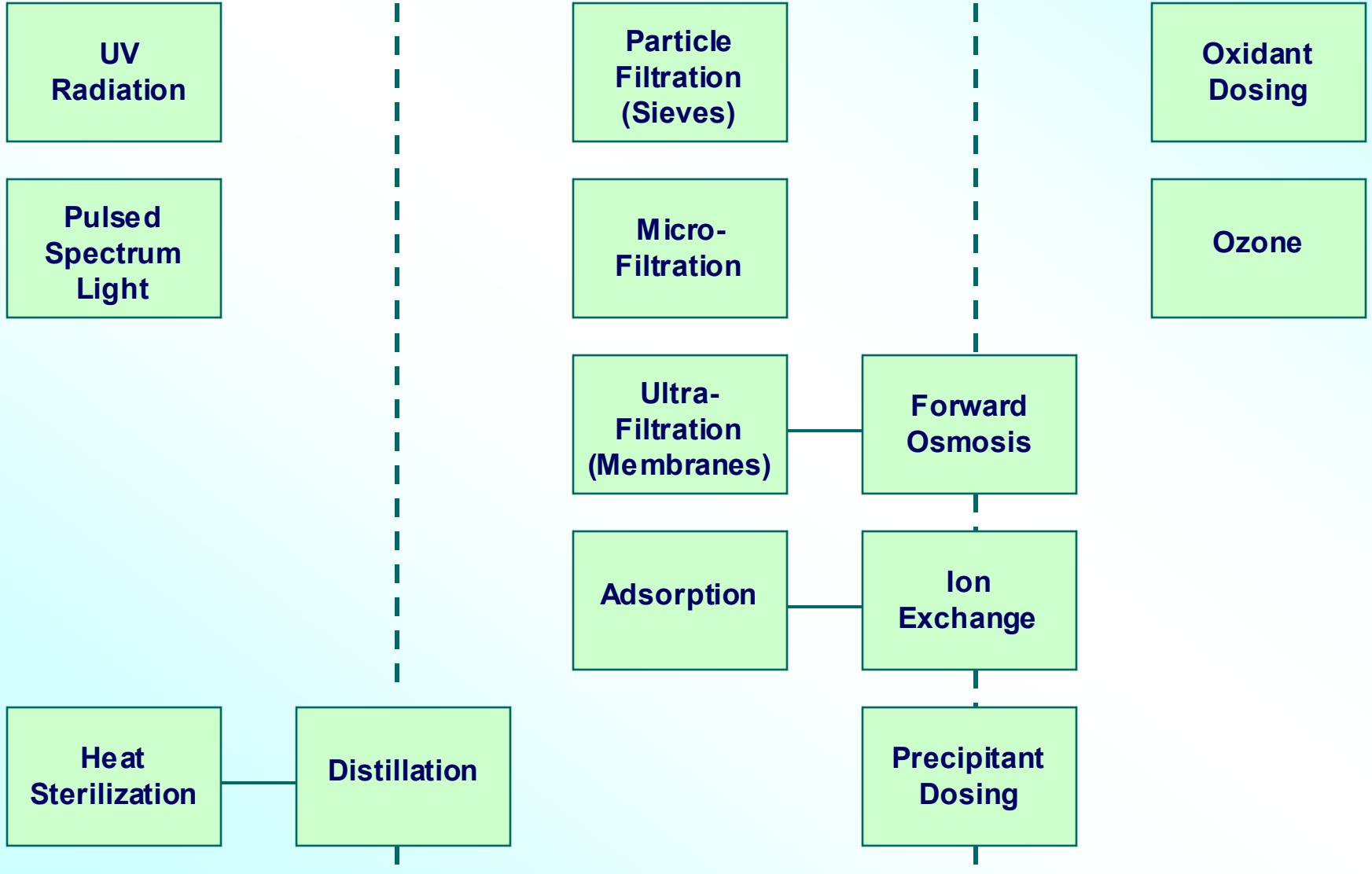
**Ion  
Exchange**

**Precipitant  
Dosing**

## Chemical Treatment

**Oxidant  
Dosing**

**Ozone**

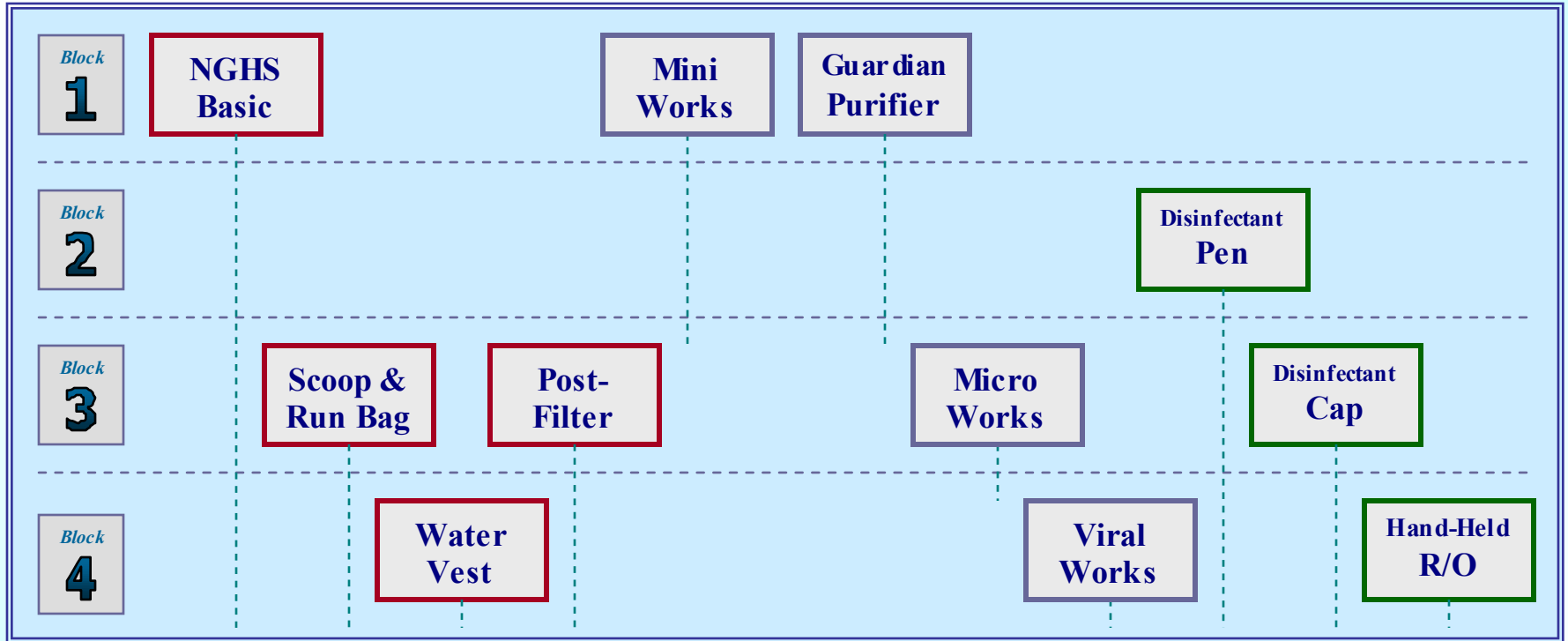


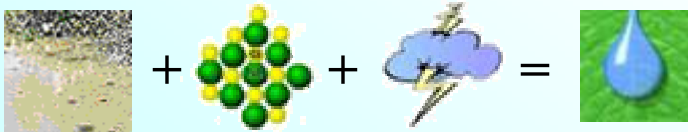
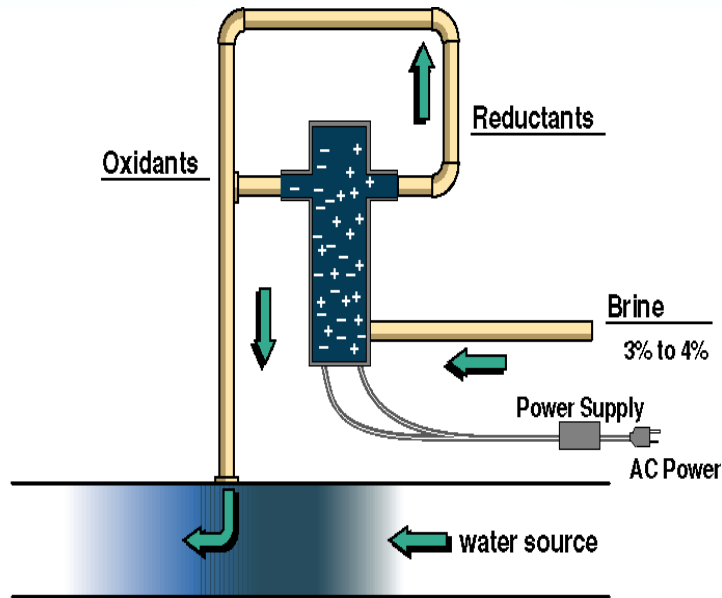




# Water

## Block Approach





- A miniaturization of MIOX's municipal water purification technology.
- A revolutionary, not evolutionary product.
- A breakthrough reduction in size and weight.



## Product

- Tooling
- Production set-up
- Trial production run
- Lab and field testing



## Market Acceptance






- Usability studies
- Configuration
- Names and marketing strategies
- Packaging
- Instructional materials



# Military

## *Product Launch*

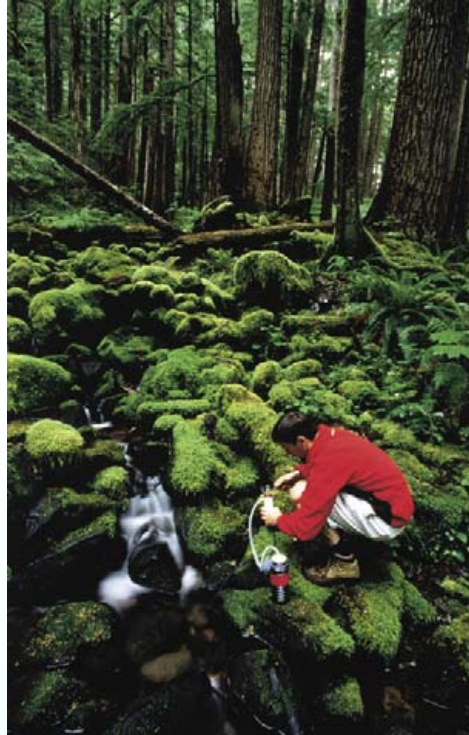
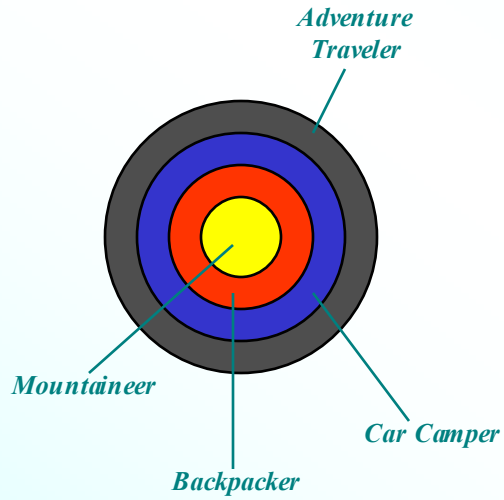


<u>Service</u>	<u>Program</u>	<u>Status</u>
 NAVSEA	SOCOM 5-2003	Pen tested by Seals at Coastal Systems Station. Conclusion: “Pen will be a great improvement over existing devices.” “Pen will reduce fear of terrorist attack on municipal water supplies.”
 Marine Corps	IWPS	Evaluating technologies for an “Individual Water Purifier System” (#M67854-03-I-3074).
 DARPA	Warfighter Support	Conducted field evaluations on the Disinfectant Pen with the Marine Corps in Afghanistan.
 AFMESA	LMUA May 2002	Conducted a Limited Military Utility Assessment. Disinfectant Pens “performed reliably”, and “were considered easy to use”. “Should be considered for immediate fielding by Air Force”.
 TACOM	NGHS	Supporting the development work on the NGHS pre- and post-filter.

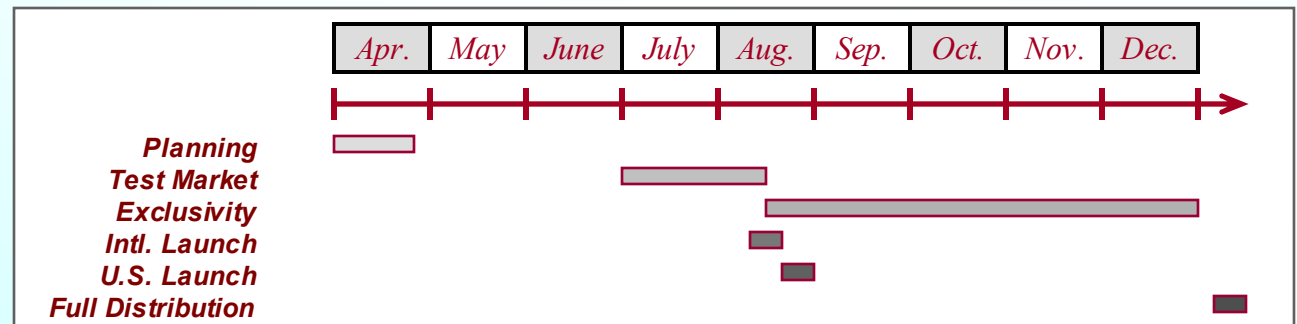


# Outdoor

## *Product Launch*



- *Niche*
- *Positioning*
- *Partnering*
- *Communications*





- Portable water purification devices are currently sold only to backpackers and adventure travelers.
- Concerns that a terrorist will contaminate municipal water systems have increased.

- In the event of a significant event, local solutions are needed.
- MSR/MIOX Disinfectant Pen has breakthrough capabilities for Homeland Security applications.



